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ABSTRACT

Performance or behavioral objectives have been important in vocational education for many years, as evidenced by the significant breakthroughs in vocational education curriculum development and evaluation during the past 10 years which have been linked to purposeful use of performance objectives. This review of literature and research relating to performance objectives has revealed that a number of articles, instructional guides, conferences, and workshops have dealt with developing skills in writing performance objectives for vocational education. A limited number of research studies deal with writing and using performance objectives and the effects of the writing and using of objectives on teachers' attitudes. None of the studies have concentrated on performance objectives alone. Future research should concentrate directly on performance objectives, with all other variables, such as teaching methods or instructional materials, controlled in the research design. Some suggested research areas include: (1) identifying strategies for incorporating the affective domain into the format of vocational education performance objectives, (2) identifying processes for integrating occupational analysis data directly into performance objectives and teaching strategies, and (3) creating and testing performance objective evaluation instruments appropriate for vocational education. (SB)

Information

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INSTRUCTIONAL PERFORMANCE
OBJECTIVES IN VOCATIONAL
EDUCATION CURRICULUM**

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**REVIEW AND ANALYSIS OF INSTRUCTIONAL
PERFORMANCE OBJECTIVES
IN VOCATIONAL EDUCATION CURRICULUM**

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FOREWORD

In accordance with a rising interest in performance objectives, there also arises a need for better understanding of their capabilities. Performance objectives, or behavioral objectives, are discussed in this publication as they relate specifically to vocational education. Utilization of these objectives is seen as one means of providing a basis for curriculum evaluation.

This review and analysis considers the possible contributions of performance objectives, describes conferences and workshops which have emphasized the development and implementation of them, and identifies curriculum guides based on performance objectives.

In conclusion, the author notes current gaps in research and suggests courses for future research.

The profession is indebted to David Allen for his scholarship in the preparation of this report. Recognition is also due William H. Melching, Human Resources Research Organization, Fort Bliss Texas; Harry Huffman, Colorado State University; and Harry Ammerman, The Center, for their critical review of the manuscript prior to final revision and publication. Wesley E. Budke, Assistant Director, Information Utilization at The Center, coordinated the publication's development.

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INTRODUCTION

The desired changes in the student's knowledge, skills and attitudes are developed in the structured environment that is largely under the control of the teacher. Setting education goals and instructional objectives are the foundation for curriculum development and evaluation. The assessment of how the written curriculum correlates with instructional practices (student achievement, teaching effectiveness and the desires of the community that support the school) has resulted in a number of curriculum evaluation prototypes. Among these prototypes are some that use instructional performance objectives.

Scope of Publication

Instructional performance objectives have been in the forefront of curriculum development and instructional processes during the past decade. As with all other factors having major impact on education, there are differences of opinion concerning the value of performance objectives. No attempt has been made to discuss the value of performance objectives or describe the various evaluative prototype concepts; rather, this publication is specifically directed and limited to instructional performance objectives as used in vocational education. A cursory reference under "Background" is made as to what has or is occurring in the total educational family so that a point of reference can be established for the review of the activities in vocational education as reported in this document.

"Behavioral objectives" has been referred to by a variety of terms, the most common being "performance objectives." However, "terminal objectives," "student performance goals," "measurable objectives," and "criterion-referenced objectives" are among the other applicable terms. In this publication, "performance objectives" will be utilized

Many significant breakthroughs in vocational education over the past 10 years have been linked to the purposeful use of performance objectives. The information is herein presented so that clues and solutions to some of the problems

of concern in vocational education curriculum development and evaluation can be revealed and further studies and activities implemented. Those wishing to review research results or plan future studies, plan or instruct vocational teacher education programs, develop or evaluate vocational education curriculum, or others who are interested in performance objectives as used in vocational education should find this publication useful.

Sources of Data

Every effort has been made to review all available information. The sources used were Abstracts of Instructional Materials in Vocational and Technical Education (AIM), Abstracts of Research Materials in Vocational and Technical Education (ARM), Education Index, Psychological Abstracts, Research in Education (RIE), individuals in the armed forces, public agencies and private organizations. The computer search for relevant materials supplied by The Center for Vocational and Technical education was extremely helpful.

Appreciation is expressed to all who have contributed to this publication. Special acknowledgement is hereby given to Jeanne Stone, Administrative Assistant, Division of Vocational Education, University of California, Los Angeles; Joseph A. Miller, EPDA Fellow, University of California, Los Angeles; Robert Darling, Research Consultant, California Research Coordinating Unit; and William G. Conroy, Jr., Principal Investigator, Management and Information System for Occupational Education in Massachusetts, Massachusetts Department of Education.

REVIEW AND ANALYSIS OF THE LITERATURE

The concepts of performance objectives are not new to education, particularly vocational education. The need for performance objectives is based on the premise that if educators could define their instructional objectives clearly in terms of observable behavior, measurement instruments could be constructed that could subsequently be used to evaluate the curriculum. Through evaluation, continuous improvement of curriculum scope, content, instructional sequence and methods could be achieved. A growing number of individuals believe that evaluation through established performance objectives may help to identify teacher effectiveness and efficiency in relationship to learning achievement. Regardless of the many prototypes for evaluating curriculum or the number of concomitant outcomes that may result from the use of performance objectives, the need for clearly stated educational goals and objectives cannot be denied.

Background

There has never been a time when there has been greater interest in performance objectives than at present. This interest stems from an evolving process in the techniques for writing and evaluating performance objectives. During the initial years of the Smith-Hughes Act, Bobbitt (1918) and Charters (1923) discussed the necessity for statements in general education curriculum that describe student behavior and learning experiences necessary to acquire stated behavior.

An early writer in vocational education, C. Allen (1919), developed a system for curriculum development and instruction. Although current terminology was not used, the concepts of occupational analysis and performance objectives can be easily identified. Allen refers to Bobbitt's 1918 publication in Vocational Education in a Democracy (Prosser and Allen, 1925) by stating, "This will be of interest to the reader because it deals so clearly with what is not vocational education." Regardless of what concepts were popular or styles used for expressing instructional objectives in the embryonic stages of vocational education in the United States,

the fact remains that employability skills, technical knowledge and desired attitudes were identified, curricula developed and instructional techniques applied so that predetermined performance objectives could be achieved.

In a brief overview of the activities concerned with performance objectives in areas of education other than vocational education, the contributions of only a few, by necessity and not plan, can be discussed. A comprehensive bibliography on performance objective publications listing 976 entries was compiled by Poulliotte and Peters (1971). This extensive work provides a listing of the many individuals who have made contributions in the area of performance objectives. Thus, the following describes a minute portion of the activities of many practitioners involved with performance objectives.

Since the thirties, growing emphasis by educators and psychologists for evaluating education's attainment as a result of planned curriculum activities has increased. Among this group was Tyler (1936), who stressed the necessity for clearly stated objectives if the curriculum was to be evaluated reliably. Tyler, a prolific writer, has many publications concerned with curriculum development, performance objectives and evaluation.

The budding concern for instructional outcomes gained impetus when the American Council on Education (1944) first used the term "performance" to imply specific observable outcomes. French (1957) developed a list of performance objectives for general education in the high schools. The listed performance objectives were designed for the improvement of instruction and evaluation in terms of the objectives.

In 1962, Mager, perhaps more explicitly than others, placed two major qualifications on performance objectives: behaviors must be observable and terminal. As a result, a revitalization in the writing of performance objectives occurred in the nation. Unfortunately, the performance objectives' emphasis with its methodical writing framework began to increase with a limited base of research findings.

The National Society for the Study of Education devoted its 62nd yearbook to the improvement of school testing programs. One of the contributors presented a series of 11 recommendations for evaluating educational programs (Ebel, 1963). Ebel's recommendations were based on performance

objectives. Through the years, a series of publications concerned with evaluation and testing have been written. Among these is a list of educational evaluation guidelines developed by Popham (1971). This publication describes the steps in evaluating a curriculum that should be useful in the various educational categories and levels. Included in the publication is a one-page description of the prototypes for curriculum evaluation.

Paralleling the development of performance objectives was the creation of taxonomies of educational goals devoted to a classification of behaviors. Notably, among these taxonomies were Bloom (1956), Krathwohl (1964) and Simpson (1966). Bloom's handbook was devoted to the classification of behaviors in the cognitive domain, Krathwohl's handbook was concerned with the affective domain and Simpson's handbook with the psychomotor domain.

Individuals in vocational education also have been active in utilizing performance objectives in curriculum development. In addition to national meetings, inservice workshops, research and numerous publications, Byers and Huffman (1972), developed a manual for vocational and technical educators to assist them in writing performance objectives. This comprehensive publication will assist greatly in developing vocational education curriculum based on the concepts of performance objectives.

A review of the past 10 years is presented here under six headings: general articles, development of objectives, conferences and workshops, prepared instructional guides, exemplary programs, and research.

General Articles

There are a number of published articles concerned with the values of, or needs for, performance objectives in vocational curriculum. Asbell (1968) focuses on five major themes for vocational education. He emphasizes the importance of setting realistic performance objectives for learning and the need for encompassing these objectives in new curricula to the realistic world of work. Beginning in the elementary school with "real" learning experiences, the article describes a concept that currently may be identified with career education.

Tuckman (1968) proposes an integrated curriculum involving the development of performance objectives by subject matter and utilizing a number of methods for integrating the objectives. A feature of his curriculum is to help those students who reject school because of its lack of relevance and their unwillingness to tolerate the manner in which the subjects are taught. His curriculum model attempts to develop certain basic skills that students previously have not been able to acquire in traditional school programs.

Finding a systematic way of proceeding from stated performance objectives to the specifications of the skills and technical knowledge required to meet the objectives, is the theme of an article by Quinn (1969). He stresses the necessity to eliminate shortcut answers to training questions and suggests that an analysis of required job tasks and cognitive information be made in order to derive relevant performance objectives.

Two articles concerning performance objectives in agricultural education written by Loewen (1969) and Wilson (1969) discuss the need for using performance objectives in agricultural instruction. A closer relationship is stressed between what is expected of student learning achievement and what is taught in an agricultural program.

Methods for identifying office education activities are discussed in both the 1969 and 1970 National Business Education Yearbook. Huffman, et al. (1969) and Brady and Peterson (1970) developed taxonomy methods for selecting performance objectives for instructional content in business education. The descriptions of these two books provide a ready source of information for business education curriculum development.

Morrison (1970), in the American Vocational Journal, describes a system for using performance objectives with instructional material development. The system, based on performance objectives, is designed to help students identify their learning needs and ascertain the skills and knowledges they need to attain. The coupling of appropriate instructional materials with student learning needs will make instruction more meaningful.

A practical approach to occupational curriculum development with a high priority assigned to the writing of performance objectives was written by Pautler (1970). Along with

other authors, he notes the need for well-stated objectives that permit program evaluation to occur in terms of its stated objectives.

Darm (1970) discusses the use of performance objectives in kinematics (concerned with the motion of machine parts without regard to stress). He states that objectives must be clearly identified if students are to learn abstract principles.

Creating verifiable objectives in terms of theories of instruction is discussed by Adkins (1971). He offers guidelines for developing curricula according to a "life skills education model." Six alternatives for redefinition of school programs are presented.

In writing about evaluation, Mather (1970) developed a series of check sheets related to learning experiences based on observing classroom activities. An approach to assessing students' affective behavior is also described.

A system to assess the reliability and validity of performance objectives is described by Yost (1971). The concern for reliable and valid measures in vocational education is an area requiring additional study. Suggestions in the article can be used in determining future research activities.

A number of "occasional papers" were developed by the Management and Information System for Occupational Education, Massachusetts. These papers compiled by Conroy (1972b) are basically concerned with providing vocational education with a system that has performance objectives and uses a computer for constant evaluation and feedback information.

A series of articles have been written concerning the values of performance objectives in vocational education. These articles appear to be based on observation rather than research findings.

Dickson (1969) emphasizes the importance in the formulation of meaningful performance objectives. He describes the necessity for curriculum materials to provide for differences in level of achievement and learning rates among students. Eiken (1969), however, points out that existing objectives in the total area of business education have not been defined adequately. He notes the need for development of specific performance outcomes that would be based on current empirical

data secured through on-the-job task analysis and sequenced into meaningful learning activities.

According to Cohen (1970), a full commitment to the use of performance objectives requires teachers to attend to student learning as their prime obligation. He further indicates that students will accept performance objectives as worthy of their attention and achievement if the instructor synthesizes his knowledge of students, subject matter and the apparent social needs of the community.

In a seminar paper, Schrup, (1971) developed a model in which steps were described for the construction of a "career ladder" curriculum. Such a curriculum would apply the results of job analysis from which specific performance objectives would be developed. Primarily, the suggested curriculum provides a student with skills that would enable him to seek employment in a hierarchy of an entry level position in his interest area. Should the student reenter school, with a minimum of additional course prerequisites, he could gain new skills to allow him to qualify for a higher position.

Development of Objectives

A predominance of college courses are presently concerned with the format for writing performance objectives. However, many of these courses do not go one step further to help teachers develop techniques for identifying, implementing and evaluating learning experiences based on performance objectives. A number of models and publications concern the writing of objectives or incorporating the objectives into the curriculum. These publications are in addition to the several dozen "how to write performance objectives" books that are available.

A model which translates the learning processes and the objectives into identifiable behavioral responses was developed by Tuckman (1967). Performance goals were analyzed by task analysis and placed in a sequence of prerequisite behaviors. The sequenced behaviors were then used as a frame of reference for the development of content and test items. From the test data, analysis was made that pinpoints locations of course strengths and weaknesses.

In a further study, Tuckman (1970) considers a systems model for the design and management of instruction in occupational fields. The model has three phases: (1) analysis, in which occupational tasks were specified through task analysis, and the tasks were restated as performance objectives and then sequenced; (2) synthesis, in which instructional activities were specified and evaluation procedures designed; and (3) operation, in which instructional activities were carried out and evaluation data collected. Feedback and iteration follow the phases wherein the data collected during the operation phase was fed back into the analysis so that it could be tested, validated and redesigned.

A methodology to assist adult educators in agriculture to communicate concepts more effectively is presented by Pletsch (1969). He considers the determination of anticipated performance requirements as being essential to the development of more effective training programs and instructional materials.

A series of self-instructional booklets designed to assist teachers in improving their instructional effectiveness was written by Johnson and Johnson (1969). Specifically, the booklets describe ways for specifying and analyzing objectives, measuring attainment of objectives, arranging instructional activities, selecting and designing instructional methods and materials and refining instructional systems. The booklets provide specific procedures to assist teachers in producing a short self-instructional package for one of their courses.

Conroy (1970) conducted advanced work in the development of a performance objective classification system. This developmental work for the Massachusetts and New York Evaluation Service Center for Occupational Education provides a classification system designed to treat performance objectives from which cognitive, psychomotor and affective capabilities could be inferred. The system provides an analytical tool for evaluation and program modification.

In another work, Conroy (1972a) describes the need for synthesized performance objectives. The synthesized performance objectives use computerized storage and retrieval processes and make it possible for participating schools to compare objectives in terms of a variety of criteria in a way that no single set of standards is forced upon the schools. These performance objectives allow educators to systematically profit from their collective experiences and communicate their results on a regular basis to others.

Two activities using teacher developed performance objectives are reported by Capper (1969) and Starkweather (1971a,b). Capper's document lists performance objectives for 39 courses taught at the junior college. The intent of the publication is not to standardize course offerings, but rather to provide prototype goals and objectives from which instructors select and include in their instruction. Performance objectives were taken from various instructors and documents in the ERIC Clearinghouse for Junior Colleges. Objectives for shorthand, health and business education are included in the document. Starkweather developed objectives for two courses, one in office machines and the other in health. In these courses, existing curriculum performance objectives are offered as samples for instructors in developing their instructional units.

Conferences and Workshops

A major benefit from the performance objective emphasis during the past decade has been the increased number of vocational education teacher and administrator conferences and workshops. Through national and statewide activities, communication lines were opened and, through mutual exchange of practices, instructional programs were revised and innovations initiated.

National Activities. Over 150 participants, including state department of education supervisors and consultants, specialists and teacher educators from all services of vocational and technical education representing 31 states and Canada, attended a national seminar in Chicago that was concerned with educational media in vocational and technical education. In reporting the results of the seminar, Cotrell (1967) provides a guide for states to follow in sponsoring state-level seminars for the applications of instructional media for vocational and technical education.

A National Curriculum Materials Clinic was held in Kansas City, Missouri, January, 1967. The major emphasis of the conference was to make vocational curriculum more relevant to student needs and job demands. The necessity for realistic performance objectives was emphasized. Four major topics discussed at the conference were the leadership role of the U. S. Office of Education in curriculum development, teacher education's role in curriculum development, the necessity for

increasing the utilization of existing curriculum materials, and adapting curriculum research to increase the quality of vocational education instruction.

The National Conference on Curriculum Development in Vocational Education held in Dallas (1969) provided a forum for conferees to become involved in establishing procedures necessary for the further development of vocational curriculum techniques. This conference was followed by a series of regional conferences from which the publication A Guide for the Development of Curriculum in Vocational and Technical Education was developed by the Division of Vocational Education, University of California, Los Angeles (1969a). Among the significant concepts presented at this conference were the Instructional Objectives Exchange (IOX) (Popham, 1969) and the necessity for the interchange of curriculum materials from groups and agencies, both civilian and military, throughout the nation.

Statewide Activities. A project to demonstrate the feasibility of improving vocational education curriculum by applying computer programming to increase flexibility in school scheduling resulted in a conference at Stanford University. Dwight Allen (1967) reports on performance criteria developed to gauge individual student progress. The goals of the conference were threefold: (1) to emphasize the need in vocational education for performance criteria to evaluate desired student outcomes and to replace the prevailing criterion of time; (2) to identify the component elements of performance criteria and establish a common frame of reference; and (3) to develop procedures that the attending teachers could apply in producing performance oriented instructional packages. The conference agenda was organized around large group presentations by leaders in the area of individualized instruction and small group discussions with 10 to 12 participants in each group. Various teacher participants brought examples of performance curricula that they had prepared. The examples were used in the small group discussions for deeper analysis of effective performance criteria. All information developed at the conference was disseminated to schools participating in the project.

Ryan (1968) describes a four-week institute at Oregon State University to prepare vocational educators in leadership positions as change agents in vocational education curriculum development. Concepts of the organic curriculum

(Bushnell and Morgan, 1966) were coupled with the use of performance objectives in developing a systems approach for vocational curriculum. Follow-up results reveal that over two-thirds of the institute's participants engaged in dissemination, training and development activities relating to their role as change agents in vocational education curriculum development. However, it was also found that workshop activities must make a concerted effort aimed at the participants' attitudes as well as developing increased knowledge and improving skills, if they are to be successful.

Recognizing the need to provide classroom teachers with teaching aids usable in career development, a federally subsidized project was conducted by the University of Minnesota (1968). At this conference, teachers formulated performance objectives and activities. In many instances, the stated performance objectives were followed by statements of rationale, enabling objectives and suggested teaching-learning approaches.

A workshop for new junior college deans of instruction conducted at the University of California, Los Angeles, had, as a major emphasis, the use of performance objectives as a basis for instructional supervision and the improvement of instruction (Chadbourn, 1969). It was noted that the mention of performance objectives might "raise the faculty's hackles" if they could not see how performance objectives could assist their instruction. However, the development of performance objectives provided teachers with a systematic framework for their instruction. Therefore, a "plan of action" was developed to assist deans of instruction in having their teachers realize that the writing of performance objectives was not easy work.

Voegel (1970) describes a six-week summer workshop on instructional development at William Rainey Harper College, Illinois. Six outside consultants and 10 faculty members worked with the participants. Health education was one of the areas in which performance objectives and instructional strategies were developed. An important outcome of the workshop was the participants' realization of how complex subject content converted to performance objectives can simplify instruction. In three follow-up sessions, participants reported on how the workshop helped in teaching their various courses.

A workshop was held in Auburn, Massachusetts, to prepare participants from six pilot schools for their coordination

roles in developing performance objectives (Conroy, 1969). The workshop was designed to allow local autonomy in curriculum control and individual program assessment.

Developing performance objectives for exploratory programs related to the world of work in grades seven to 12 was reported by Bottoms and Cleere (1969). Participants of a one-week workshop held in Georgia prepared an overall plan for assisting students in identifying learning experiences related to work. The plan has elements that should be of assistance to other states.

Many school districts have conducted workshops to assist their instructional staff in developing performance objectives for their course content. One example is the San Mateo Union High School District, California (1970), where staff members participated in a workshop for the purpose of identifying performance objectives in business education, distributive education, work experience education and career guidance. The results of the workshop indicate that performance objectives must be identified and written prior to developing individualized instructional programs.

Instructional Guides

A number of curriculum guides based on performance objectives have been developed. Many of the guides are a result of teacher committees or workshop activities.

In Idaho, a guide for planning a family life education curriculum using home economics knowledge and skills was developed by a committee of teachers and state supervisors (Idaho State Board for Vocational Education, 1967). The guide was pilot tested in 30 Idaho schools and revised twice. At the beginning of each teaching unit, the entire concept, generalizations and performance outcomes for the total unit were stated. The guide includes units in child care, housing and home furnishings, foods and nutrition, clothing, family health and hospitality.

Johnson, et al. (1967) prepared guidelines for teaching personal and family relationships that were developed through the cooperative efforts of state supervisors, teacher educators, family life and social health consultants, and teachers in the state of Washington. The guidelines indicate

performance outcomes for the beginning, intermediate and advanced levels of training. A color-coded arrangement designates instructional level, performance outcomes and generalizations for each unit. The appendix contains examples of bulletin boards, case studies, poems, minute dramas, value tests, recommended books, periodicals, pamphlets, films, filmstrips, recordings and evaluation references.

Guidelines for Home Economics Education in Secondary Schools was developed by home economics personnel of The Douglass College and the New Jersey State Department of Education (1968) with the aid of local supervisors, teachers and administrators. The curriculum guide is designed to serve students with varying needs, abilities and interests. Part I of the guide concerns the curriculum, and Part II covers teaching plans and performance outcomes.

Graduate students prepared a guide concerned with the study of physiological and psychological growth and maturation of the entire life cycle for the Colorado State Board for Community Colleges and Occupational Education (1968). Performance objectives were used to describe the indicated kinds and depths of student performance achievements. Objectives, generalizations, learning and evaluation experiences are listed in tabular form.

State supervisors, teacher educators, homemaking teachers and college child development specialists in Washington studied and developed guidelines relating to the teaching of child development in the junior and senior high school (Washington State Division of Vocational Education, 1968). The guide is organized in terms of performance objectives for the beginning, intermediate and advanced levels. Generalizations with supporting content are identified for each terminal performance. Suggested teaching plans and resource sheets of reference for developing teaching plans are provided for all generalizations.

The Oklahoma State Board of Vocational and Technical Education (1969) has developed a guide for teachers in planning consumer education programs at three levels (grades 9-10, 10-11, 11-12 and young adults) for students in vocational home economics. Emphasis includes earning and managing family and personal income, functions and uses of money in our economy, and achieving financial security. The program is integrated with other home economics subject matter areas. Performance objectives, generalizations, learning experiences and evaluation suggestions are included.

Kase (1969) compiled the results of two workshops that were attended by approximately 60 vocational education teachers. Performance objectives for career development in the educational areas of agriculture, business, home economics, industry and technology, and the educationally handicapped were developed. The objectives were submitted to students for reaction and were revised.

A workshop committee aided the Nashville-Davidson County Metropolitan Public Schools, Tennessee (1969), in preparing a curriculum guide for consumer and homemaking education. Instructional units are organized by grade level, and each unit contains performance objectives, concepts and generalizations. The guide is designed for a three-year program of instruction, grades 10 through 12.

A model curriculum containing three major aspects: (1) homemaking and family life, (2) employment utilizing home economics knowledge and skill, and (3) pre-professional education was developed by Simpson (1969). Scope and sequence charts with course outlines for grades seven-12 for all three model aspects were devised. Detailed plans containing performance objectives, generalizations, instructional content, teaching aids, suggestions for evaluation and references were field tested in grades seven, eight and 10. Revisions were made as a result of field test findings. Curriculum guides for occupationally oriented classes in grades 11 and 12 contain instructional material for child care, and food and clothing services. Integrating the world of work with specific elements in home economics fills and area of need in vocational education.

The Home Economics Instructional Materials Center at Texas Technological University (1971) has prepared a curriculum bulletin designed for a one-semester consumer education course at the 11th or 12th grade level. Performance objectives, suggested learning experiences, key points and references for students and teachers accompany each unit.

A series of guides in business education has emerged from the San Mateo Union High School District, California, and the Weber County School District, Utah. With the assistance of business educators, Chabolla (1971) developed a guide for teaching office machines. The guide contains a series of tests for use at the beginning of each unit and for use to evaluate student performance in reaction to stated

performance objectives upon completion of each unit. San Mateo Union High School District (1970) has also developed a phased shorthand program designed to allow each student to move as rapidly toward achieving the goal of vocational competence as his motivation, ability and time permit. Successful completion of the program is based upon the student's ability to meet minimum performance objectives.

The Weber County School District (1970a,b), with the support of school administrators and several business education teachers, developed two volumes of individualized curriculum material. Volume I pertains to beginning typewriting, beginning and advanced business machines and bookkeeping. Volume II pertains to beginning and advanced shorthand, typewriting, transcription and secretarial procedures. Both volumes are based on selected textbooks and contain performance objectives.

Luther (1970) has prepared a manual to assist distributive education teachers in establishing learning objectives for a pre-employment laboratory curriculum. The manual consists of performance objectives with information on how to use them in teaching. Information is included for utilizing the performance objectives with laboratory projects.

A curriculum guide for industrial mechanics was developed by the Division of Community Colleges and Career Education of the Oregon State Board of Education (1969). Five key occupations were chosen: automobile mechanic, construction equipment mechanic, diesel mechanic, garage foreman and office machine serviceman. A group of occupational clusters was established with performance objectives for each of the instructional courses.

David Allen, et al. (1970a) compiled a curriculum guide for the aviation mechanics occupation. The guide includes performance objectives for each learning activity, feedback questions and check items to assist teachers in determining how well each student accomplishes the individual objectives. Each performance objective is keyed to the concept of instructional levels. This concept was originally determined and developed in A Study of the Aviation Mechanics Occupation (David Allen, et al., 1966). The 1970 curriculum guide has been adopted or used as a reference by all certificated aviation mechanics schools in revising their curriculum to concur with current Federal Aviation Administration regulations.

The Pittsburgh Board of Public Education, Division of Curriculum and Instruction (1968), developed a course of study for a two-year program (1,250 hours) in cosmetology. A curriculum committee took into account the subject content required by the Pennsylvania State Board of Cosmetology Examination. Each unit contains performance objectives and content matter in the form of generalizations. Learning activities, evaluative procedures and references are included.

In cooperation with the Bureau of Industrial Education, California State Department of Education, cosmetology teachers prepared a guide for teaching cosmetology to the physically handicapped (University of California, 1971). The guide consists of course content and performance objectives for seven para-cosmetologist jobs in which physically handicapped individuals could be employed. The guide contains the essential information necessary for formulating special programs for the physically handicapped.

Barton (1970) prepared guidelines to aid instructors in developing programs tailored to the communication needs of their vocational students and to the occupational requirements of employers. The functions of each communication skill is analyzed and presented in diagrams. An explanation in relationship to performance requirements follows the reason for each function's use.

Exemplary Programs

Performance objectives have been used in a number of exemplary programs. These exemplary vocational education activities have occurred throughout the nation.

An early pre-technological program tailored after the Richmond Plan (Cogswell Polytechnical College, 1963) involved 10 high schools in the San Francisco Bay Area. Smith (1966) describes the program as being oriented to the "capable average" learner. It consists of a two-year pre-engineering technology sequence of four integrated and correlated courses beginning in the 11th grade. The curriculum was developed by describing the tasks of engineering technicians, stating performance objectives in measurable terms, and analyzing general and specific skills and knowledges needed by the technicians and then combining the results into subject content.

The Maryland Plan involves a four-phased process (Maley, 1969). It makes use of "on-the-job performance analysis" as a technique for determining instructional goals and projected outcomes. By coupling job skill and technical knowledge demands with instructional performance objectives, consistency of instructional goals, projected outcomes and evaluation activities appear to have a more precise attainment.

The Burlington County College, New Jersey, approach to instructional systems for student learning follows a three-phase procedural model (Evans, 1971). First, student learning needs were analyzed, then performance objectives and test items were written and, finally, teaching and learning strategies were designed, implemented and evaluated. From evaluation findings of student learning achievement, the performance objectives and instructional strategies were modified. The system permits the use of a number of instructional methods such as large group instruction, directed independent study and seminars. This multi-track approach permits the various students engaged in different learning activities to accomplish the established performance objectives of the course.

Vocational Village was opened by the Portland, Oregon, School District in 1968 and provides learning opportunities for students who have not been successful in traditional high school programs. Thurston and Weber (1971) describe seven specific accomplishments of the project. Among these are: (1) an effective method for interviewing and screening prospective students; (2) a systematic procedure for developing performance-based instructional materials having a job orientation approach; (3) a series of guidelines for developing "how to do" instructional materials for personalized and individualized instruction; and (4) an effective method for monitoring student progress. Increased receptivity of graduates by employers, as well as increased school holding power, indicate positive results from this program.

Project ABLE, an experimental curriculum demonstrated in the new Quincy, Massachusetts, Vocational-Technical School, has course content derived from an analysis of representative jobs in 11 different vocational areas (American Institutes for Research, 1967). On the basis of the analysis, recommended objectives for a number of vocational curricula have been established.

General woodworking, auto mechanics, electronics, mathematics, English and science curricula have been established. The woodworking curriculum evolved from a frequency chart of job skills related to the woodworking family of occupations, General Woodworking Curriculum (American Institutes for Research, 1968). Butler, et al. (1968) designed the mathematics curriculum using specific performance objectives for individualized instruction. The curriculum provides for exit points for each student at the end of any one of three high school years and includes an opportunity for review within every semester.

Crozier and Butler (1969) incorporated performance objectives in a prepared self-study course for first-level electronic assemblers and found that a ratio of 18 students to one instructor was satisfactory. During the "first attempt," 24 to 100 percent of the performance objectives were attained. However, revision of the study materials and refinement of the objectives greatly increased student achievement.

To evaluate the activities of Project ABLE, Ullery (1970) compiled a manual having the performance objectives as the basis for the evaluation instruments. Ullery and Nicastro (1970), in their final report, indicated that a field test of adequate size must be used and a longitudinal study of an adequate number of graduates must be conducted to determine the overall effectiveness of Project ABLE.

The Portland Community College, Oregon, is organized into six divisions integrating related course work in all areas with each division, and having no distinction between the "academic and the vocational." De Bernardis (1970) described the college as the "open door educational shopping center." When course performance objectives are not met because instructors have not delivered, the college refunds tuition to the students.

The Washington State Board for Community College Education's (1970) System Master Plan provides for general goals and specific operating performance objectives having a system that emphasizes open-door admissions. The plan maintains a wide range of coordinated vocational training opportunities and related guidance services in 22 separate districts of the state.

Research

A limited number of research studies in vocational education have been conducted to determine how well performance objectives assist learning. Mager and Clark (1963) performed an industrial training experiment to determine how well students progress in a program which supplies them with their performance objectives upon admittance. The students were asked to identify the skills they needed in order to attain the specified objectives given to them. The results of the study indicated that by supplying the performance objectives, training time was reduced 65 percent. Beyond this, there was no experimental design to determine how effective the training was in comparison with existing training procedures.

A study to (1) identify a set of cognitive performance objectives, (2) develop the extent to which these objectives are considered essential by home management professors, and (3) establish a list of essential objectives for home management courses was conducted by Mau (1965). Using Bloom's six classifications of the cognitive domain, 50 performance objectives were developed. Professors from 78.8 percent of American degree-granting undergraduate home management programs ranked the objectives. Of the 50 objectives, 17 were rated essential and an additional 12 as desirable. As a result of this study, a list of the highest ranking performance objectives were formulated and combined with specific content components for home management instruction.

Eight curriculum objectives for public community college business programs were defined and validated by a jury of prominent American educators (Griffitts, 1967). The eight objectives were then evaluated in 17 Texas public community colleges that were randomly selected. The study found that more emphasis was placed by community college business education department heads on performance objectives related to transfer requirements of higher education programs than on those written for job entry or retraining. In addition, study results indicated that the colleges studied had no current information on training needs, changing job patterns or follow-up studies of graduates.

Popham (1968) studied how well-experienced certificated teachers and nonexperienced uncertificated individuals were able to instruct students in achieving pre-specified instructional objectives. Both carburetion and electronics

instructional units consisting solely of objectives measurable by pencil tests were used. There were 49 carburetion objectives and 23 electronics objectives. All teachers and non-teachers were given sets of operationally defined performance objectives. Both teacher groups attempted to have their students achieve the defined performance objectives during an instructional period of approximately 10 hours. Pre and post tests based explicitly on the objectives were given to each student, and the average class achievement was used as the index of teacher proficiency. At that time, 28 auto mechanics teachers and 28 non-teachers instructed over 1,200 pupils, while 16 electronics teachers and 16 non-teachers instructed over 700 pupils. Comparison of pupil performance revealed no systematic difference between the performance of the teachers and non-teachers for either auto mechanics or electronics.

Mount San Jacinto College, California (1968), compared typical lecture methods of presentation with multi-media instruction in auto mechanics. Auto mechanics instructors wrote performance objectives for every job or operation the student was expected to know at the end of the program. Then the instructors produced or purchased filmstrips and audio tapes from commercial sources that best presented the necessary instruction. Although there was no significant difference in student achievement, there was evidence that the multi-media system of instruction had advantages with academic or socio-economically handicapped students. No attempt was made to determine if the learning advantages were the result of the media or the performance objectives; however, both elements contributed to some degree.

A bivariate inversion research design was used to test the effectiveness of an experimental curriculum based on performance objectives by David Allen, et al. (1968). Twelve instructors, six from private schools and six from public schools, were randomly selected to participate in the experiment. Each instructor used two instructional curriculum formats with his students. One format was of his own choosing, although the instructor was given the overall objectives for the instructional area he selected. The second format was one that had performance objectives developed for the experimental curriculum and in which the instructor received teacher training. The Federal Aviation Administration (FAA) developed and used their validated final examination test questions. The examinations were administered to students

in the experimental and control classes on the last day of 60 hours of instruction by FAA inspectors. The same examinations, with only the sequencing of question items changed, was readministered to all students after a 90-day period. Both initial and follow-up test results indicated a significant difference between the students' mastery in the experimental classes (performance objectives) over their mastery in the control classes (overall objectives).

Dalis (1969) determined that students in high school health education classes who, prior to instruction, received precise information of expected performance objectives showed significantly greater achievement than those students who did not receive the information. In addition, students receiving precise performance objectives, when compared with those students receiving vague objectives, were better able to select learning activities that related to the performance objectives. However, the amount of time spent in daily study outside of class was not significantly influenced by knowledge of what was expected in advance of instruction.

A study of the training systems used for disadvantaged youth at three different training centers was conducted by Motzel (1969). It was found that in each of the training centers the instructional elements receiving the most emphasis were: (1) the establishment of a list of job entry skills; and (2) the use of individualized learning materials. The elements receiving the least emphasis were: (1) effective utilization of motivational rewards; and (2) the apparent lack of instructional performance objectives. One reason given for the minimal use of performance objectives was that relatively few of the instructors in the training center had attended any professional conference, teacher training seminar or workshop or had read a current article in the field of education and training. An instructional program having identified learning skills and performance objectives without properly trained instructors will not attain learning goals.

A study to demonstrate the feasibility of developing standardized instruments for increasing student learning in industrial education was directed by Baldwin (1969). It was found that careful attention to test construction procedure, based on curriculum analysis, performance objectives, tables of specifications, item writing committees, pretesting, statistical analysis, revision and norming can produce reliable

and valid measures for assessing student achievement. The measurement instruments resulting from the study are being made available for operational use.

Phillips (1971) states that performance objectives do produce definite learning results, although the level of significance in his study was less than sufficient to justify the efforts and resources used in the teaching methodology. He concludes that the evaluative instrument may not have been adequately correlated to the instructional objectives. He suggests that further study of the effectiveness of instructional objectives is needed.

A study by West (1971) is primarily confined to instruction in business education and is concerned with relationships between teaching acts and learning outcomes. It focuses attention on generalizations related to specified performance objectives in both the instructional materials and methods of instruction. A review of 81 research studies in business education reveals that most study conclusions resulted from questionnaires, solicited opinions and judgments. There was a noticeable lack of experimental studies on the effects of performance objectives on student achievement.

Waukesha County Technical Institute, Wisconsin (1970), conducted research to determine the effectiveness of an approach to instruction in electronics technology. A "closed loop systems approach to instruction" was developed for the study from the assimilation of the works and concepts of many professional vocational educators. A survey instrument was developed and mailed to 287 electronics firms in the three largest midwestern metropolitan areas. The collected data demonstrated that a systems approach could be used to identify the characteristics of employed electronics technicians, the tasks they perform and their educational requirements. Needed skills required for students to master the stated performance objectives and teaching techniques were identified. One item of conflict was the incompatibility of specifying exact number of hours that students spend studying each aspect of the course with the concept that each student learns at his own pace until he masters a performance objective.

Webber College, Florida (1970), sponsored a study to investigate the use of a systems approach to prepare teachers in the use of performance objectives. The test group consisted of five male and seven female instructors from Webber College,

a small two-year institution that prepares women for business careers. Results of the study indicate that, at the end of the project, the participants generally could write high-quality performance objectives and suitable test items, although some encountered difficulty in sequencing the objectives. Attitudes toward the systems approach to writing performance objectives were slightly more positive at the end of the course. The participating teachers cited organizational and evaluative qualities as advantages and susceptibility to triviality and lack of flexibility as disadvantages of the systems approach.

A major objective of Tuckman's (1969) study of curricula for occupational preparation was to increase the relevance of high school education for the large majority of youth who must seek employment or further job training upon graduation. It was designed to assist curriculum center directors in becoming aware of performance objectives in curriculum development. The study attempts to refine and test schemes for classifying educational objectives in terms of performance objectives.

A Study of the Air Traffic Control, A Feasibility Study had as a major goal the converting of task analysis data into performance objectives through computer use (David Allen, et al., 1970b). Begun in 1968, this study uses a technique that provides the basis for rapidly converting both stored and research data into performance objectives. The system allows for storing, retrieving and disseminating performance objectives. It also permits addition, deletion or correction of any line item within the performance objective.

A study of five cities' experiences with performance contracting was reported by Carpenter and Hall (1971). Concerning performance objectives, their study detects difficulties in defining objectives in subject areas other than those involving simple skills. In some cases, there was difficulty in measuring the attainment of performance objectives as well as in the selection and administration of appropriate examinations. There was no significant difference in learning gains with the use of performance objectives, sophisticated teaching devices and innovative techniques over traditional instruction.

The military services have conducted a number of studies directly aimed at determining the advantages or disadvantages of performance objectives. A study in a Navy training school

by Kemp (1963) sought to find how well learning increased when students were told, in a very specific fashion, what was expected of them and how they would be evaluated. The area that was selected for investigation was the mathematics portion of the Advanced Sonorman Course. The performance of the experimental class was compared to that of two previous classes on two tests which covered mathematical areas given in the course. The experimental class did perform significantly better on the two tests than the previous classes. The successful use of objectives and criteria led to the adoption of this technique in the teaching of mathematics.

Two Navy research projects were concerned with the development of curriculum having performance objectives. Pickering and Anderson (1966) developed, conducted and evaluated an experimental electronics technician training program. The course is directed toward job performance and in-classroom training procedures. Attention focuses on what the student is learning to do, rather than on what the instructor is teaching. Initial evidence indicated that there was no significant difference in the performance between the experimental and control groups. Rundquist's study (1970) resulted in a manual for job training course design and improvement. The systematic procedure described in the manual derives performance objectives for training from identified job tasks.

The Human Resources Research Organization (HumRRO) has conducted a series of research projects for the Army, identifying training requirements most appropriate to ordnance electronics maintenance (McKnight and Butler, 1964). A task analysis identifies knowledges and skills most appropriately acquired through training. Study findings reveal that having an appropriate task analysis results in a reduction in training time coupled with an increase in end-of-course proficiency. Ammerman and Melching (1966) note that performance objectives in instruction may be of two primary kinds: terminal and enabling. Terminal objectives are representations of the ultimate performance capabilities to be sought by the instructional programs. Enabling objectives, on the other hand, are not instructional goals in and of themselves. Rather, they are dependent upon terminal objectives for their value and are necessary to bridge the gap between existing student ability and each derived terminal objective.

While preparing a radio operator course having performance objectives and a revised teaching technique, Goffard, et al. (1970) found a significant increase in learning. However, it could not be determined if the performance objectives or teaching procedure, or a combination of both, affected the results. Gebhard (1970) developed and tested an electronics communication equipment maintenance course. Using an analysis of troubleshooting steps and performance objectives, the results of 22 hours of individual testing during a six-day period showed no significant difference between the groups studied.

A long-range plan for conversion to an all volunteer army having extensive innovation in training was developed by Taylor, et al. (1971). Instruction was based on performance objectives having an absolute criterion (a go/no-go standard). The study found that graduates demonstrated higher levels of skill proficiency within a shorter time frame than the existing conventional system. In addition, the performance-based training permitted high achievements by low as well as high mental category individuals.

Summary

The concepts of performance objectives are not new to vocational education. Although performance objectives are not clearly stated in a precise grammatical form, the necessity for predetermined employability skills, technical knowledge and attitudes has provided the major elements within vocational education curriculum and instruction.

Many articles and instructional guides have been written, and numbers of conferences and workshops conducted for the purpose of developing skills in the writing of performance objectives. Some of the conferences and workshops have been instrumental in updating vocational education curriculum and instructional practices. Vocational education instructional areas which were weak in the procedures of occupational analysis and the identification of employability requirements, appear to have accepted performance objectives in their curriculum development.

The danger of jumping on a "bandwagon" to be with the group could be crucial. Fortunately, a proven and "time tested" procedure for determining instructional performance

objectives for learning and job demands has long existed in vocational education. The limited number of studies that have been completed deal with writing of performance objectives; the use of performance objectives in instruction, curriculum development and instructional evaluation; and the effects of writing and using performance objectives on teacher attitudes. None of the studies concentrates on performance objectives alone. Rather, they all have a number of other items such as task analysis, teaching methods, or instructional materials included in the research. The lack of concerted research to determine how well performance objectives increase initial learning and assist retention or help teachers in their instruction, is evident. This does not mean that performance objectives have not contributed to the improvement of instruction; but, rather, that we must continually question curriculum development techniques and teaching systems through research, if vocational education instruction is to remain dynamic.

IMPLICATIONS FOR RESEARCH

There is need for systematic research striving toward obtaining data and information upon which more viable vocational education programs can be built. Curriculum development in vocational education should not be based on some "subjective bent," but, rather, based on carefully formulated problems with research designs to obtain valid and reliable results that are relevant to the goals of vocational education.

Research Gaps

With the exception of a few studies, there are great gaps in research concerned with performance objectives. Research needs to be applied directly to performance objectives and all other variables controlled. The sparseness of studies that have been completed suggests that the following items require research.

- 1) Determination of how well performance objectives increase learning.
- 2) Identification of techniques for incorporating the affective domain into the format of vocational education performance objectives.
- 3) Determination of the impact of performance objectives upon the attitudes and practices of teachers who are the developers or users of these objectives.
- 4) Identification of strategies for determining achievement of stated performance objectives by classes of students with varied learning abilities.
- 5) Determination of educational accountability schemes based on student's achievement of performance objectives in relationship to teacher effectiveness.
- 6) Determination and development of performance objective standards having flexible go/no-go ranges rather than fixed numerical values.

- 7) Identification of processes for integrating occupational analysis data directly into performance objectives and teaching strategies.
- 8) Determination of ways to reconcile instructional blocks of time with the concept that each student achieves the performance objective at his own learning rate.
- 9) Identification of the effectiveness of "how to write performance objectives instruction" upon teacher acceptance and use in their instructional programs.
- 10) Determination of techniques for coordinating instructional activities, equipment and facilities with performance objectives.
- 11) Creation and testing of performance objective evaluation instruments appropriate for vocational education.

Recommendations

Vocational education has had, as its main core, the goal of providing salable skills to the youth and adults in the nation. It has always been result-oriented. The desire for achieving excellence has been its hallmark. The following recommendations may further the contributions of vocational education.

- 1) Consider funding research specifically designed to find answers to the items listed under research gaps.
- 2) Consider research activities concerned with performance objectives in vocational education curriculum that are oriented to individual student needs within the varied groups preparing for different levels of employment.
- 3) Consider research that would formulate performance objectives that permit maximum flexibility in meeting geographic occupational needs and technical variations throughout the nation.

- 4) Consider the development of a format for evaluation results that provides both verbal and statistical information and that invokes confidence in the findings.

BIBLIOGRAPHY¹

- Adkins, Winthrop R., et al. One Institution: Six Alternatives. Washington, DC: American Association of Junior Colleges; and Los Angeles: ERIC Clearinghouse for Junior College Information. May, 1971. 16 pp. ED 048 857 MF \$0.65 HC \$3.29.
- Allen, Charles R. The Instructor, the Man and the Job. Philadelphia: J. B. Lippincott Co. 1919, revised 1945.
- Allen, David, et al. A Study of the Aviation Mechanics Occupation. Los Angeles: Division of Vocational Education, University of California; and Sacramento: Bureau of Industrial Education, California State Department of Education. 1966.
- _____. A National Study of the Aviation Mechanics Occupation, Phase II, Interim Report. Los Angeles: University of California. 1968.
- _____. A National Study of the Aviation Mechanics Occupation, Phase III, Curriculum and Resurvey. Los Angeles: University of California. August, 1970a.
- _____. Air Traffic Control, A Feasibility Study, 1970. Sacramento: Bureau of Industrial Education, California State Department of Education; and Los Angeles: Division of Vocational Education, University of California. 1970b.

¹Bibliographical entries followed by an ED or MP number are generally available in hard copy or microfiche through the Educational Resources Information Center (ERIC). This availability is indicated by the abbreviations, MF for microfiche and HC for hard copy. Order from ERIC Document Reproduction Service (EDRS), P. O. Drawer 0, Bethesda, Maryland 20014. Payment must accompany orders totaling less than \$10.00. Doctoral dissertations with a microfilm number are available in microfilm (\$4.00) or xerographic copy (\$10.00) from University Microfilms, Dissertation Copies, P. O. Box 1764, Ann Arbor, Michigan 48106.

Allen, Dwight W. Flexibility for Vocational Education Through Computer Scheduling. Stanford, CA: School of Education, Stanford University. January 1, 1967. 23 pp.
VT 002 634, MF available in VT-ERIC Set ED 045 860.

American Council on Education. A Design for General Education for Members of the Armed Forces. American Council on Educational Studies, Series 1, Reports of Committees and Conferences, No. 18. Washington, DC: American Council on Education. 1944.

American Institute for Research. The Development and Evaluation of an Experimental Curriculum for the New Quincy (Mass.) Vocational-Technical School; Development and Implementation Problems. Eighth Quarterly Report. Pittsburgh, PA: American Institutes for Research; and Washington, DC: U.S. Office of Education, Department of Health, Education and Welfare. 1967. 63 pp.
ED 028 306 MF \$0.65 HC \$3.29.

_____. The "Project ABLE" General Woodworking Curriculum. Interim Product. Pittsburgh, PA: American Institutes for Research; and Washington, DC: U.S. Office of Education, Department of Health, Education and Welfare. 1968. 47 pp. ED 030 721 MF \$0.65 HC \$3.29.

Ammerman, Harry L., and Melching, William H. The Derivation, Analysis, and Classification of Instructional Objectives. Technical Report 66-4. Alexandria, VA: Human Resource Research Organization, The George Washington University. 1966. 50 pp. ED 014 793, document not available from EDRS.

Asbell, Bernard. Education and the Real World of Jobs. Washington, DC: National Committee for Support of the Public Schools; and U.S. Office of Education, Department of Health, Education, and Welfare. 1968. 85 pp.
ED 029 990 MF \$0.65 HC \$3.29.

Baldwin, Thomas S. "The Development of Some Objective Measures of Performance for Selected Post High School Trade and Technical Programs." Journal of Industrial Teacher Education. Vol. 6, No. 3 (Spring, 1969), 74-83.

- Barton, Everett H. Communications Requirements for Technical Occupations. Olympia: Washington Research Coordinating Unit for Vocational Education. 1970. 45 pp. VT 011 581, MF available in VT-ERIC Set ED 052 390.
- Bloom, Benjamin S., et al., eds. A Taxonomy of Educational Objectives: The Classification of Educational Goals. Handbook I, The Cognitive Domain. New York: David McKay Company, Inc. 1956.
- Bobbitt, John F. The Curriculum. Boston: Houghton Mifflin Company. 1918.
- Bottoms, Gene, and Cleere, W. Ray. A One-Week Institute to Develop Objectives and Models for a Continuous Exploratory Program Related to the World of Work from Junior High through Senior High School (West Georgia National Conference, Carrollton, Georgia, September, 1969). Final Report. Carrollton: West Georgia College. September, 1969. 172 pp. ED 036 651 MF \$0.65 HC \$6.58.
- Brady, Mary M., and Peterson, Marla. "The Taxonomy Method of Identifying Office Activities." National Business Education Yearbook. 8 (1970), 113-120 (Chapter 15).
- Butler, F. Coit, et al. Development and Evaluation of an Experimental Curriculum for the New Quincy (Mass.) Vocational-Technical School; The Mathematics Curriculum. Tenth Quarterly Technical Report. Pittsburgh, PA: American Institutes for Research; and Washington, DC: U.S. Office of Education, Department of Health, Education and Welfare. 1968. 172 pp. ED 029 088 MF \$0.65 HC \$6.58.
- Byers, Edward E., and Huffman, Harry H. Writing Performance Goals: Strategy and Prototypes. A Manual for Vocational and Technical Educators. Columbus: The Center for Vocational and Technical Education, The Ohio State University; and New York: Gregg Division, McGraw-Hill Book Company. n.d. 107 pp. ED 061 413 MF \$0.65 HC \$6.58.
- Capper, Michael R. Instructional Objectives for Junior College Courses. Los Angeles: ERIC Clearinghouse for Junior College Information, University of California. November, 1969. 4 pp. ED 033 679 MF \$0.65 HC \$3.29.

Carpenter, Polly, and Hall, George R. Case Studies in Educational Performance Contracting, Conclusions and Implications. Santa Monica: The Rand Corporation. 1971.

Chabolla, Richard M., et al. Calculating Machines I. San Mateo, CA: San Mateo Union High School District. n.d. 21 pp. VT 012 221, MF available in VT-ERIC Set ED 056 238.

Chadbourn, James P. The Future in Now! Report of a Workshop for New Junior College Deans of Instruction (Los Angeles, July 7-12, 1969). Los Angeles: Junior College Leadership Program, University of California. 1969. 22 pp. ED 032 885 MF \$0.65 HC \$3.29.

Charters, Werrett W. Curriculum Construction. New York: Macmillan. 1923.

Cogswell Polytechnical College. The Richmond Plan. Report of a Study by the Richmond (California) Union High School District and Cogswell Polytechnical College. San Francisco: Cogswell Polytechnical College. 1963.

Cohen, Arthur M., ed. "Technology: Three or Me? Behavioral Objectives and the College Teacher." Educational Technology. Vol. 10, No. 11 (November, 1970), 57-60.

Colorado State Board for Community Colleges and Occupational Education. Colorado Guide for Teaching Human Development for Home Economics Education, Secondary Adult and Occupations. Denver: Colorado State Board for Community Colleges and Occupational Education; and Fort Collins: Home Economics Division, Department of Vocational Education, Colorado State University. June, 1968. 187 pp. ED 023 871 MF \$0.65 HC \$6.58.

Conroy, William G., Jr., ed. A Guide to Evaluation; Massachusetts Information Feedback System for Vocational Education. First Technical Progress Report. Woburn: The Massachusetts Vocational Education Research Coordinating Unit, Division of Research and Development, Massachusetts Department of Education. September, 1969. 121 pp. ED 034 071 MF \$0.65 HC \$6.58.

- . A Capability Classification System. Boston, MA: Research Coordinating Unit for Vocational Education. December 17, 1970. 25 pp. ED 051 374 MF \$0.65 HC \$3.29.
- . The Synthesized Behavioral Objective. Mineographed. Winchester: Management and Information System, Division of Occupational Education, Massachusetts Department of Education. 1972a.
- . Population-Sample Relationships and Data Types. Mimeographed. Winchester, MA: Management and Information System for Occupational Education. 1972b.
- Cotrell, Calvin J., and Hauck, Edward F. Educational Media in Vocational and Technical Education, a Report of a National Seminar. Leadership Training Series No. 14. Columbus: The Center for Vocational and Technical Education, The Ohio State University. 1967. 255 pp. ED 017 730 MF \$0.65 HC \$9.87.
- Crozier, Patrick W., and Butler, F. Coit, Jr. The Electronics Curriculum. Eleventh Quarterly Technical Report. Pittsburgh, PA: American Institutes for Research; and Washington, DC: U.S. Office of Education, Department of Health, Education, and Welfare. January 31, 1969. 142 pp. ED 029 156 MF \$0.65 HC \$6.58.
- Dalis, Gus T. "The Effect of Precise Objectives Upon Student Achievement in Health Education." Unpublished dissertation. Los Angeles: University of California. 1968-69.
- Darm, Adam E. "Using Behavioral Objectives and Problem-Solving in Kinematics." School Shop. Vol. 29, No. 7 (March, 1970), 60-62.
- De Bernardis, Amo. Portland Community College is an "Educational Shopping Center." Portland, OR: Portland Community College. 1970.
- Dickson, William G. "Planning Curriculum Materials: A Publisher's Viewpoint." American Vocational Journal. Vol. 44, No. 3 (March, 1969), 32-34.

- Ebel, Robert L. "Relation of Testing Programs to Educational Goals." National Society for the Study of Education Yearbook, Part II. Chicago: The National Society for the Study of Education. 1963.
- Eiken, Shirley A. "New Systems Needed in Business Education." Business Education Forum. Vol. 23, No. 8 (May, 1969), 5-7.
- Evaluation Service Center for Occupational Education. Behavioral Objectives Training Package. Amherst, MA: Evaluation Service Center for Occupational Education; Albany: New York State Education Department; and Boston: Massachusetts State Board of Education. 1971. 128 pp. ED 060 218 MF \$0.65 HC \$6.58.
- Evans, N. Dean, ed. Instructional Systems for Student Learning: The Burlington County College Approach. Pemberton, NJ: Burlington County College. June, 1971. 22 pp. ED 051 812 MF \$0.65 HC \$3.29.
- French, Will. Behavioral Goals of General Education in High School. New York: Russell Sage Foundation. 1957.
- Gebhard, Ricahrd M. Development of a Training Program and Job Aids for Maintenance of Electronic Communication Equipment. Technical Report 70-19. Alexandria, VA: Human Resources Research Organization. December, 1970. 82 pp. ED 053 292 MF \$0.65 HC \$3.29.
- Goffard, S. James, et al. Development and Evaluation of an Improved Radio Operator Course (MOS 05B20). Technical Report 70-8. Alexandria, VA: Human Resources Research Organization. June, 1970. 38 pp. ED 044 584, document not available from EDRS.
- Griffitts, Horace F. "A Study Defining Eight Objectives of Business Programs in Public Community Colleges and Determining the Importance of These Objectives." Doctoral dissertation. East Lansing: Michigan State University. 1967. 189 pp. ED 027 384, document not available from EDRS. Available microfilm no.68-4143.
- Huffman, H., et al. "Taxonomy of Office Activities." National Business Education Yearbook. 7 (1969), 243-278 (Chapters 24-26).

- Idaho State Board for Vocational Education. Useful and Gainful Homemaking Education for Secondary, Adult and Area Vocational Schools. Home Economics Bulletin 83, Idaho Vo-Ed No. 83. Boise: Home Economics Division, Idaho State Board for Vocational Education. June, 1967. 181 pp. VT 004 808, MF available in VT-ERIC Set ED 030 770.
- Johnson, Nancy L., et al. Guidelines for Teaching Personal and Family Relationships in Junior and Senior High School. Home Economics Bulletin 31. Olympia: Division of Home and Family Life, Washington State Board for Vocational Education. 1967. 159 pp. VT 001 769, MF available in VT-ERIC Set ED 032 434.
- Johnson, Stuart, and Johnson, Rita. An Instructional Reorganization Series. Rougemont, NC: Regional Education Laboratory for the Carolinas and Virginia. November, 1969. 113 pp. ED 037 198 MF \$0.65 HC \$6.58.
- Kase, Donald H., comp. Behavioral Objectives of Several Current Courses Offered in the Areas of Industry Technology, Home Economics, Agriculture, and Business (and Other Selected Curriculum Areas) in Napa, Marin, Solano, and Sonoma Counties. Napa, CA: North Bay PACE Center. February, 1969. 77 pp. VT 011 296, MF available in VT-ERIC Set ED 051 432.
- Kemp, Eugenia N. The Use of Objectives in Teaching Mathematics. Technical Bulletin 63-7. Washington: Bureau of Naval Personnel. 1963.
- Krathwohl, David R., ed. A Taxonomy of Educational Objectives: The Classification of Educational Goals. Handbook II, The Affective Domain. New York: David McKay Company, Inc. 1964.
- Lanham, Frank W. "Criterion-Referenced Instruction." National Business Education Quarterly. Vol. 38, No. 4 (Summer, 1970), 16-20.
- Loewen, Curtis E. "Teaching on Target." Agricultural Education. Vol. 41, No. 10 (April, 1969), 233.

Luter, Robert R. The Use of Behavioral Objectives in the Pre-Employment Laboratory Curriculum of Distributive Education. Distributive Education Monograph Series for Improving Teaching Effectiveness. Austin: Distributive Education Instructional Materials Laboratory, University of Texas. December, 1970. 44 pp. VT 012 701, document not available from EDRS.

Mager, Robert F. Preparing Instructional Objectives. Palo Alto, CA: Fearon Publishers, Inc. 1962. 60 pp. ED 018 143, document not available from EDRS.

_____, and Clark, Cecil. "Explorations in Student-Controlled Instruction." Psychological Reports. Vol. 13, No. 1 (August, 1963), 71-76.

Maley, Donald. The Maryland Plan for Industrial Arts in the Junior High School and the Behavioral Task Analysis Approach. College Park: University of Maryland. April, 1969. 40 pp. ED 034 852 MF \$0.65 HC \$3.29.

Mather, Mary. "Evaluation--More Than Tests." Illinois Teacher for Contemporary Roles. Vol. 13, No. 6 (August, 1970), 263-281.

Mau, Helen E. "An Investigation of Cognitive Objectives for College Undergraduate Home Management Programs." Unpublished doctoral dissertation. New York: Columbia University. 1965. 263 pp. Available microfilm no. 65-8851.

McKnight, A. James, and Adams, Bert B. The Development of Driver Education Objectives Through an Analysis of the Driving Task. Alexandria, VA: Human Resources Research Organization; and Washington, DC: National Highway Safety Bureau, Department of Transportation. 1971. 14 pp. ED 052 361 MF \$0.65 HC \$3.29.

_____, and Butler, Patrick J. Identification of Electronics Maintenance Training Requirements: Development and Evaluation of an Experimental Ordnance Radar Repair Course. HumRRO Research Report 15. Washington, DC: Human Resources Research Office, The George Washington University. December, 1964.

- Morgon, Robert M., and Bushnell, David S. Designing an Organic Curriculum. November, 1966. 12 pp.
ED 017 737 MF \$0.65 HC \$3.29.
- Morrison, E. J. "Use of Behavioral Objectives in Instructional Materials Development." American Vocational Journal. Vol. 45, No. 2 (February, 1970), 46-48.
- Motzel, Leon W. "An Analysis of Selected Disadvantaged Youth Training Programs in the Light of Behavioral Science Research." Doctoral dissertation. Washington, DC: The Catholic University of America. 1969.
- Mount San Jacinto College. A Study of the Comparative Teaching Efficiency of a Multi-Media Instructional System Versus the Traditional Lecture Method for Youth Who Have Academic and Socioeconomic Handicaps. Final Report. Gilman Hot Springs, CA: Mount San Jacinto College. 1968. 17 pp. VT 007 349, MF available in VT-ERIC Set ED 042 060.
- Nashville-Davidson County Metropolitan Public Schools. A Curriculum Guide in Consumer and Homemaking Education for Home Economics. Nashville, TN: Metropolitan Public Schools. 1969. 386 pp. VT 013 296, MF available in VT-ERIC Set ED 059 407.
- New Jersey State Department of Education. Guidelines for Home Economics Education in Secondary Schools. Trenton: Division of Vocational Education, New Jersey State Department of Education. August, 1968. 150 pp.
ED 028 277 MF \$0.65 HC not available from EDRS.
- Oklahoma State Board of Vocational and Technical Education. Consumer Education; The Management of Personal and Family Financial Resources. Stillwater: Division of Home Economics Education, Oklahoma State Board of Vocational and Technical Education. 1969. 227 pp.
VT 010 569, MF available in VT-ERIC Set ED 043 931.
- Oregon State Board of Education. Industrial Mechanics, Curriculum Guide. Salem: Division of Community Colleges and Career Education, Oregon State Board of Education. September, 1969. 186 pp. VT 011 339, document not available from EDRS.

Pautler, Albert J. "Occupational Curriculum Development." Journal of Industrial Teacher Education. Vol. 7, No. 5 (Summer, 1970), 51-58.

Phillips, James A. Instructional Objectives and Economic Understanding. Cypress, CA: Cypress College. 1971. 14 pp. ED 051 808 MF \$0.65 HC \$3.29.

Pickering, Edward J., and Anderson, Adolph V. A Performance-Oriented Electronics Technician Training Program: I. Course Development and Implementation. Technical Bulletin STB 67-2. San Diego, CA: Naval Personnel Research Activity. August, 1966. 158 pp. VT 002 982, document not available from EDRS.

Pittsburgh Board of Public Education. Cosmetology 1 and 2, Course of Study. Pittsburgh, PA: Division of Curriculum and Instruction, Pittsburgh Board of Public Education; and Harrisburg: Bureau of Vocational, Technical, and Continuing Education, Pennsylvania State Department of Public Instruction. November, 1968. 171 pp. VT 013 531, MF available in VT-ERIC Set ED 059 407.

Pletsch, Douglas H. "Communication Concepts for Adult Educators." Paper presented at the National Seminar on Adult Education Research (Toronto, February 9-11, 1969). 15 pp. ED 025 727 MF \$0.65 HC \$3.29.

Popham, W. James. Performance Tests of Instructor Competence for Trade and Technical Education. Final Report. Los Angeles: University of California. June, 1968. 150 pp. ED 027 418 MF \$0.65 HC \$6.58.

_____. Instructional Objectives Exchange. Los Angeles: University of California, Graduate School of Education, Center for the Study of Evaluation. 1969.

_____. An Evaluation Guidebook. A Set of Practical Guidelines for the Educational Evaluator. Los Angeles: The Instructional Objectives Exchange. 1971.

Poulliotte, Carol A., and Peters, Marjorie G. Behavioral Objectives, A Comprehensive Bibliography. Boston: Instructional Technology Information Center, Northeastern University. 1971.

- Prosser, Charles A., and Allen, Charles R. Vocational Education in a Democracy. New York: The Century Company. 1925.
- Quinn, A. K. "No Short Cuts; No Short Circuits." Journal of Industrial Education. Vol. 28, No. 3 (January-February, 1969), 15-18.
- Rundquist, Edward A. Job Training Course Design and Improvement. Second Edition. Research Report SRR 71-4. San Diego, CA: Naval Personnel and Training Research Laboratory. 1970.
- Ryan, T. A. Summer Institute to Prepare Vocational Educators in Curriculum Development. Corvallis: Oregon State University. 1968. 231 pp. ED 023 860 MF \$0.65 HC \$9.87.
- San Mateo Union High School District. Terminal Performance Objectives for a Phased Shorthand Program in Business Education. San Mateo, CA: San Mateo Union High School District. August, 1970. 137 pp. ED 048 449 MF \$0.65 HC \$6.58.
- Schrupp, Harold A. "A 'Career Ladder' Approach to Junior College Curriculum." Mineographed seminar paper. May, 1971. 30 pp. ED 051 815 MF \$0.65 HC \$3.29.
- Simpson, Elizabeth J. The Classification of Educational Objectives, Psychomotor Domain. Urbana: University of Illinois. 1966. 45 pp. ED 010 368 MF \$0.65 HC \$3.29.
- _____. Home Economics Education at the Secondary Level; A Curriculum Model (With Emphasis on the Occupational Aspect). Urbana: College of Education, University of Illinois. 1969. 270 pp. ED 039 339 MF \$0.65 HC \$9.87.
- Smith, Garrison B., et al. The Pre-Technology Program, A Descriptive Report. San Francisco, CA: Cogswell Polytechnical College. 1966. 86 pp. ED 016 047 MF \$0.65 HC \$3.29.
- Starkweather, Ann, comp. Instructional Objectives for a Junior College Course in Office Machines. Los Angeles: ERIC Clearinghouse for Junior College Information, University of California. 1971a. 8 pp. ED 049 758 MF \$0.65 HC \$3.29.

- _____. Instructional Objectives for Junior College Course in Health. Los Angeles: ERIC Clearinghouse for Junior College Information, University of California. 1971b. 17 pp. ED 049 750 MF \$0.65 HC \$3.29.
- Taylor, John E., et al. The Development and Implementation of the Experimental Volunteer Army Training Program. Monterey, CA: Human Resources Research Organization, HumRRO Division No. 3. November, 1971.
- Texas Technological University. Consumer Education, Part One. Lubbock: Home Economics Instructional Materials Center, Texas Technological University. January, 1971. 59 pp. VT 012 577, MF available in VT-ERIC Set ED 056 238.
- Thurston, Ronald L., and Weber, Lester C. Development of a Plan to Improve the Personalized Instruction Program at Vocational Village. Final Report. Portland, OR: Portland School District. 1971. 77 pp. ED 049 395 MF \$0.65 HC \$3.29.
- Tuckman, Bruce W. The Development and Testing of an Evaluation Model for Vocational Pilot Programs. New Brunswick, NJ: Rutgers, The State University. April, 1967. 48 pp. ED 014 567 MF \$0.65 HC \$3.29.
- _____. "Analysis, Classification and Integration of Educational Objectives." Paper presented at meeting of the Educational Systems of the 70's network schools (San Mateo, California, May, 1968). New Brunswick, NJ: Rutgers, The State University. 1968. 18 pp. ED 029 125 MF \$0.65 HC \$3.29.
- _____. A Study of Curriculum for Occupational Preparation and Education. (Scope Program: Phase I.) Progress Reports I and II. New Brunswick, NJ: Rutgers, The State University. 1969. 108 pp. ED 027 438 MF \$0.65 HC \$6.58.
- _____. A Study of Curriculum for Occupational Preparation and Education. (Scope Program: Phase I.) A Systems Model for Instructional Design and Management. Incidental Report #3. New Brunswick, NJ: Rutgers, The State University. 1970. 22 pp. ED 045 808 MF \$0.65 HC \$3.29.

Tyler, Ralph W. "Defining and Measuring Objectives of Progressive Education." Educational Research Bulletin. Vol. 15, No. 3 (March 18, 1936), 67-72.

_____. Basic Principles of Curriculum and Instruction. Chicago: The University of Chicago Press. 1949.

Ullery, J. William. Management and Evaluation Plan for Instructional Systems Development for Vocational-Technical Education. Project ABLE: Development and Evaluation of an Experimental Curriculum for the New Quincy (Mass.) Vocational-Technical School. Pittsburgh, PA: American Institutes for Research; and Quincy, MA: Quincy Public Schools. April, 1970. 269 pp. ED 042 920 MF \$0.65 HC \$2.87.

_____, and Nicastro, Joseph S. Development and Evaluation of an Experimental Curriculum for the New Quincy (Mass.) Vocational-Technical School. Project ABLE, Final Report. Pittsburgh, PA: American Institutes for Research; and Quincy, MA: Quincy Public Schools. September 30, 1970. 163 pp. ED 048 492 MF \$0.65 HC \$6.58.

U. S. Office of Education. National Curriculum Materials Clinic, Vocational and Technical Education Manpower Development and Training (Kansas City, Missouri, January 17-19, 1967). Washington, DC: Division of Vocational and Technical Education, Office of Education, Department of Health, Education and Welfare. 1967. 120 pp. VT 004 628, MF available in VT-ERIC Set ED 036 657.

University of California. A Guide for the Development of Curriculum in Vocational and Technical Education. Los Angeles: Division of Vocational Education, University of California. June, 1969a. 39 pp. ED 037 535 MF \$0.65 HC \$3.29.

_____. Papers Presented at the National Conference on Curriculum Development in Vocational and Technical Education (Dallas, March 5-7, 1969). Los Angeles: University of California. March, 1969b. 83 pp. ED 027 439 MF \$0.65 HC \$3.29.

- _____. Cosmetology and the Physically Handicapped; Courses and Objectives. Los Angeles: Division of Vocational Education, University of California; and Sacramento: Bureau of Industrial Education, California State Department of Vocational Education. 1971. 46 pp. VT 013 750, MF available in VT-ERIC Set ED 062 563.
- University of Minnesota. Suggested Teaching-Learning Approaches for Career Development in the Curriculum. Minneapolis: College of Education, University of Minnesota. 1968. 182 pp. ED 053 289 MF \$0.65 HC \$6.58.
- Voegel, George H. Update 1: A Report of the Beginning Efforts of Instructional Development at William Rainey Harper College. Palatine, IL: William Rainey Harper College. January, 1970. 124 pp. ED 038 112 MF \$0.65 HC not available from EDRS.
- Washington State Division of Vocational Education. Guidelines for Teaching Child Development in Junior and Senior High School. Olympia: Home and Family Life Section, Washington State Division of Vocational Education. 1968. 122 pp. ED 023 831 MF \$0.65 HC \$6.58.
- Washington State Board for Community College Education. Design for Excellence: Washington State Community College System Master Plan, Volume I, Mission, History and Goals. Olympia: Washington State Board for Community College Education. 1970. 17 pp. ED 046 374 MF \$0.65 HC \$3.29.
- Waukesha County Technical Institute. Instructional Systems Study, Electronics Technology. Waukesha, WI: Waukesha County Technical Institute. 1970. 157 pp. ED 048 472 MF \$0.65 HC \$6.58.
- Webber College. The Webber College Project: Assessing the Feasibility of a Systems Approach for Organizing Leadership Activities. Babson Park, FL: Webber College. June, 1970. 53 pp. ED 045 064 MF \$0.65 HC \$3.29.
- Weber County School District. A Business Education Individualized Continuous Progress Research Curriculum Development Study. Volume I. Weber, UT: Weber County School District; and Salt Lake City: Utah State Board of Education. 1970a. 121 pp. VT 013 031, MF available in VT-ERIC Set ED 056 238.

- _____. Volume II. Weber, UT: Weber County School District; and Salt Lake City: Utah State Board of Education. 1970b. 272 pp. VT 013 032, MF available in VT-ERIC Set ED 056 238.
- West, Leonard J. Research on Teaching Business and Commercial Subjects. New York: Division of Teacher Education, City University of New York. January, 1971. 23 pp. ED 051 377 MF \$0.65 HC \$3.29.
- Wilson, Richard H. "Performance Criteria for Agricultural Instruction." Agricultural Education. Vol. 41, No. 11 (May, 1969), 261, 263.
- Yost, Michael. "A Strategy for Assessing the Reliability and Validity of Behavioral Objectives." NSPI Journal. Vol. 10, No. 5 (June, 1971), 13-19, 22.